

Claims

1. A condensate trap comprising a vortex chamber, an inlet and a single outlet, the inlet being disposed to admit fluid into the chamber in a manner to promote a rotational flow of the fluid in the chamber about a longitudinal axis of the chamber, and the outlet comprising an escape aperture at an axial end of the chamber.
2. A condensate trap as claimed in claim 1, wherein at least a portion of the vortex chamber is cylindrical.
3. A condensate trap as claimed in claim 1 or 2, wherein at least a portion of the vortex chamber is frusto conical.
4. A condensate trap as claimed in claims 2 and 3, wherein the cylindrical portion adjoins the wider diameter end of the frusto conical portion.
5. A condensate trap as claimed in claim 4, wherein the inlet opens into the cylindrical portion.
6. A condensate trap as claimed in claims 3 to 5, wherein the escape aperture is disposed at the narrower end of the frusto conical portion.
7. A condensate trap as claimed in any one of the preceding claims, wherein the escape aperture is situated on the longitudinal axis of the vortex chamber.

8. A condensate trap as claimed in any one of the preceding claims, wherein the escape aperture is provided in a transverse end wall of the vortex chamber.

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9. A condensate trap as claimed in any one of the preceding claims, wherein the vortex chamber is provided in a control element supported by a body provided with inlet and outlet passages, the inlet passage communicating with the inlet to the chamber and the outlet passage communicating with the escape aperture.

10. A condensate trap as claimed in claim 9, wherein the control element and the body abut each other at respective contact surfaces, the inlet and outlet passages opening at respective ports on the contact surface of the body, and the inlet and escape aperture communicating with respective ports at the contact surface of the control element.

11. A condensate trap as claimed in claim 10, wherein the control element is engageable with the body in any one of a plurality of different rotational positions about the port communicating with the escape aperture.

12. A condensate trap as claimed in claim 11, wherein the port communicating with the inlet comprises a circular groove in the contact face, centred on the port communicating with the escape aperture.

13. A condensate trap as claimed in any one of claims 9 to 12, wherein the inlet is one of a plurality of

inlets which are directed tangentially of the chamber and are distributed equally around the chamber.

14. A condensate trap as claimed in any one of claims 5 9 to 13, wherein the control element is secured to the body by a cap.

15. A condensate trap as claimed in claim 14, wherein the chamber is open at a face of the control element opposite the contact surface, the chamber being closed by the cap.

16. A condensate trap as claimed in any one of the preceding claims, further comprising a second inlet which directs the fluid towards the longitudinal axis of the chamber.

17. A condensate trap as claimed in claim 16, wherein the second inlet is provided at the same longitudinal position along the vortex chamber as the first inlet.

18. A condensate trap as claimed in claim 16 or 17, further comprising switch means to select either the first or second inlet to provide the fluid into the chamber.

19. A condensate trap as claimed in claim 18, wherein the switch means is responsive to temperature sensing means, the temperature sensing means sensing the temperature of the fluid upstream of the trap.

20. A condensate trap according to any one of the preceding claims, wherein the diameter of the escape aperture is not greater than 40mm.

21. A condensate trap according to claim 20, wherein the diameter of the escape aperture is not greater than 30mm.

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22. A condensate trap substantially as described herein with reference to, and as shown in, Figures 1 and 2, or Figures 3 and 4, or Figures 5 to 7 of the accompanying drawings.

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23. A steam plant provided with a condensate trap in accordance with any one of the preceding claims.

24. A method of controlling a flow of steam and condensate utilising a condensate trap in accordance with any one of the preceding claims in which method the flow of steam and condensate is directed into the vortex chamber in a direction so as to create a vortex within the chamber, the vortex having a low pressure region situated adjacent the escape aperture.

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25. A method of controlling a flow of steam as claimed in claim 24 and substantially as described herein.

